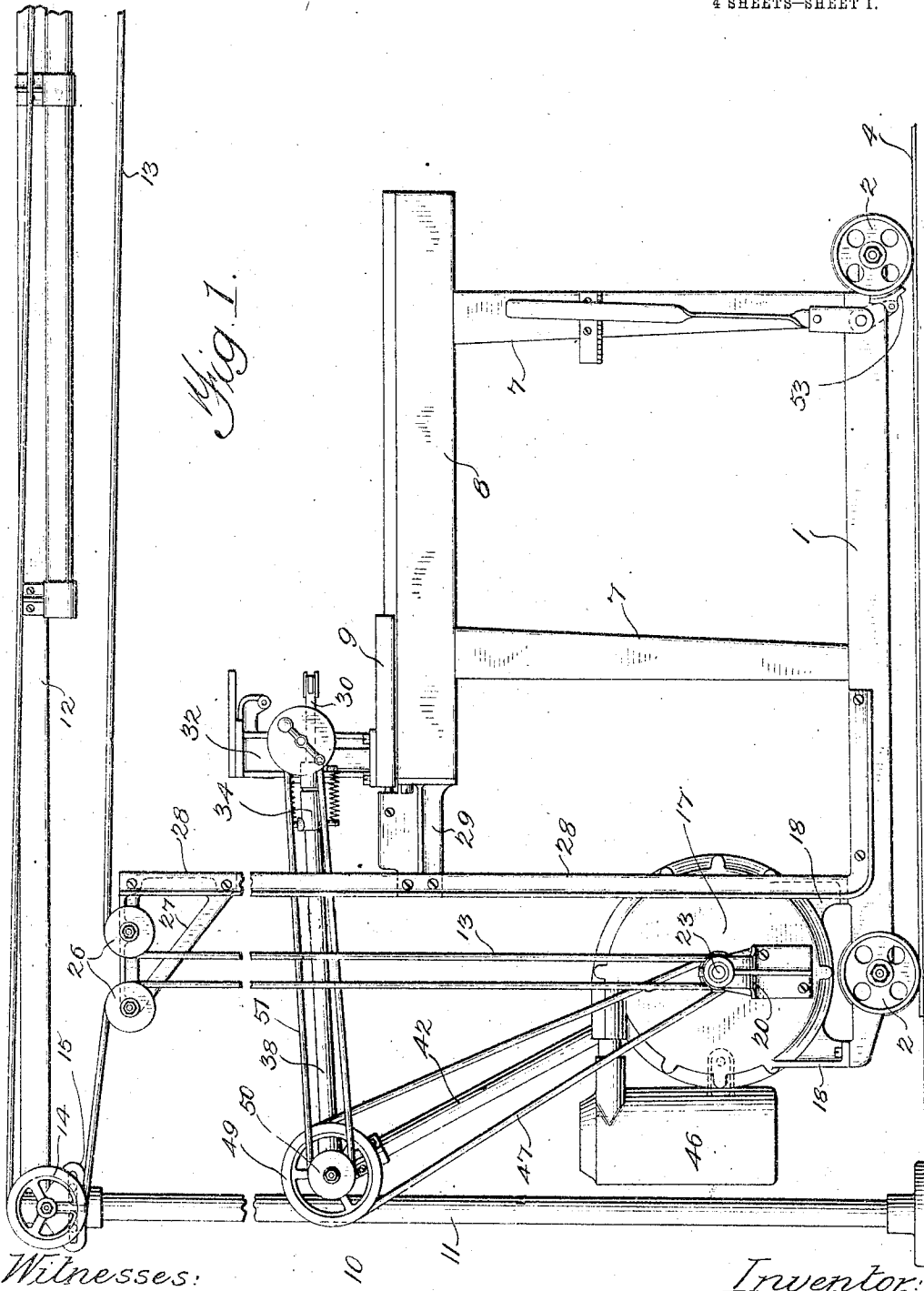


H. D. COLMAN.
TEXTILE MACHINE.
APPLICATION FILED JULY 18, 1910.

1,050,762.

Patented Jan. 14, 1913.

4 SHEETS—SHEET 1.



Witnesses:

J. C. Beck.
George Chivdahl

Inventor:

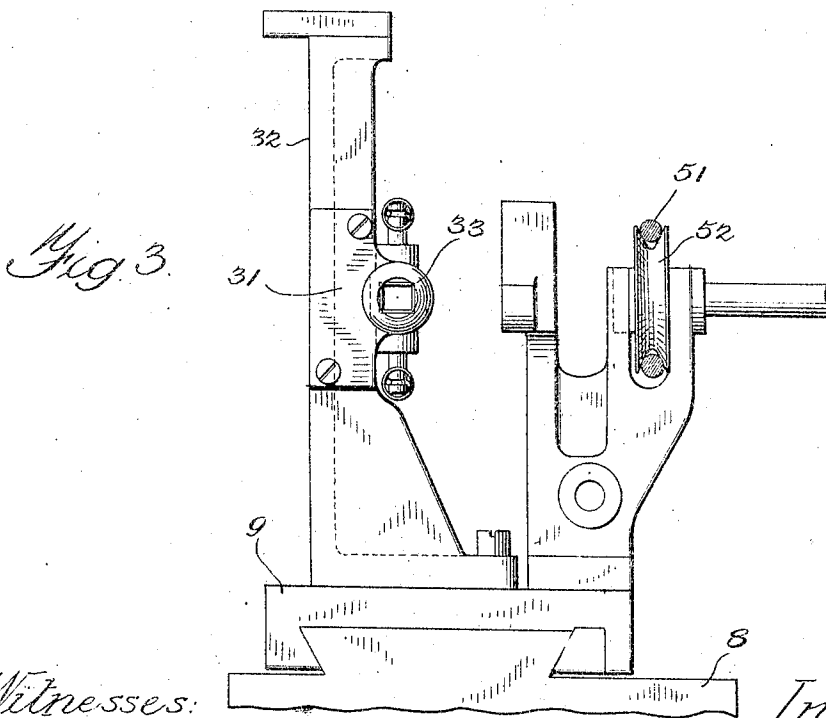
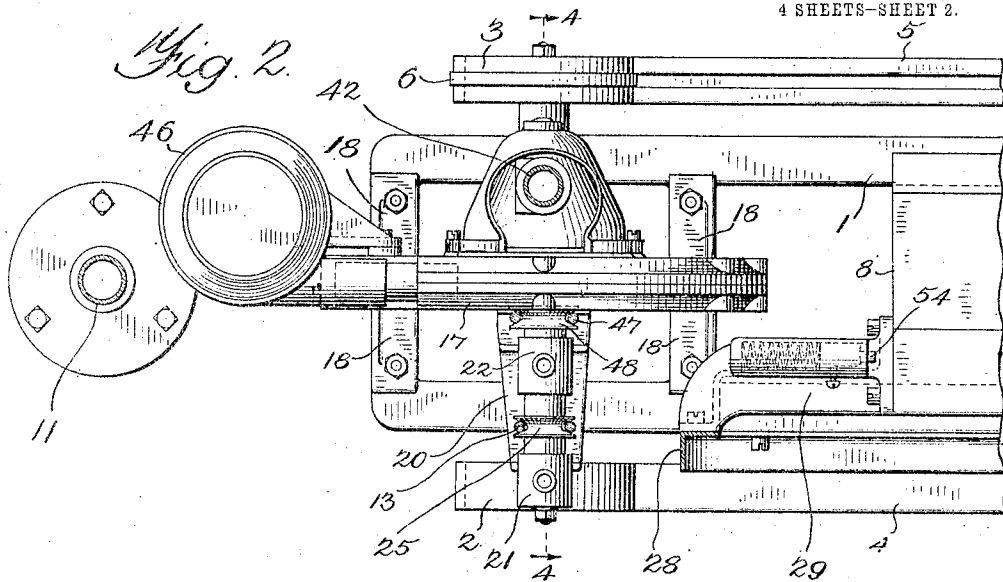
Howard D. Colman.
By Luther L. Miller, Atty.

H. D. COLMAN.
TEXTILE MACHINE.
APPLICATION FILED JULY 18, 1910.

1,050,762.

Patented Jan. 14, 1913.

4 SHEETS-SHEET 2.



Witnesses:

J. C. Beirick.
George L. Chindall.

Inventor:

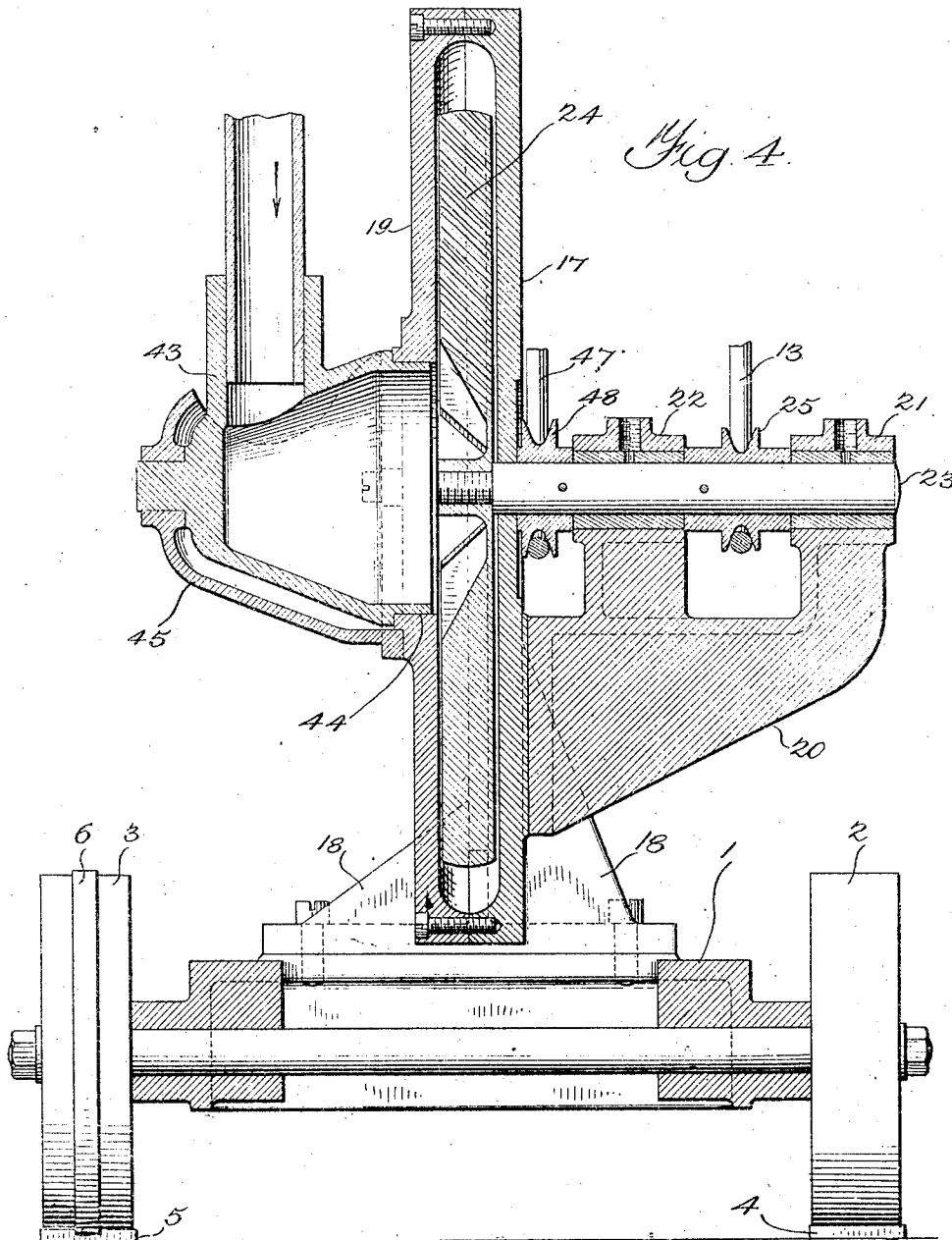
Howard D. Colman.
By Luther L. Miller
Atty

H. D. COLMAN.
TEXTILE MACHINE.
APPLICATION FILED JULY 18, 1910.

1,050,762.

Patented Jan. 14, 1913.

4 SHEETS—SHEET 3.



Witnesses:
J. C. Oerick.
George L. Chridahl

Inventor:
Howard D. Colman.
By Luther L. Miller, Att'y

H. D. COLMAN.
TEXTILE MACHINE.
APPLICATION FILED JULY 18, 1910.

1,050,762.

Patented Jan. 14, 1913.

4 SHEETS—SHEET 4.

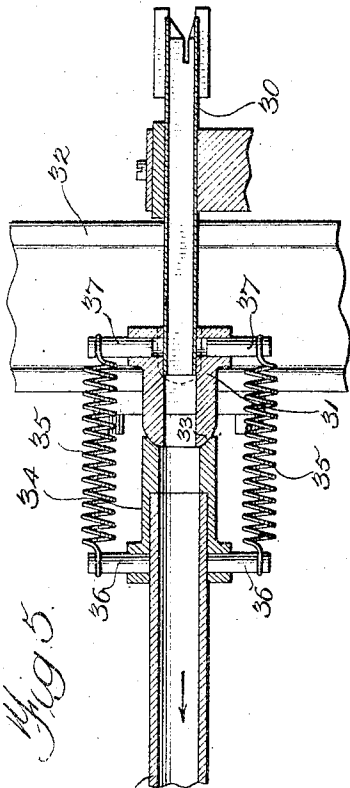


Fig. 5.

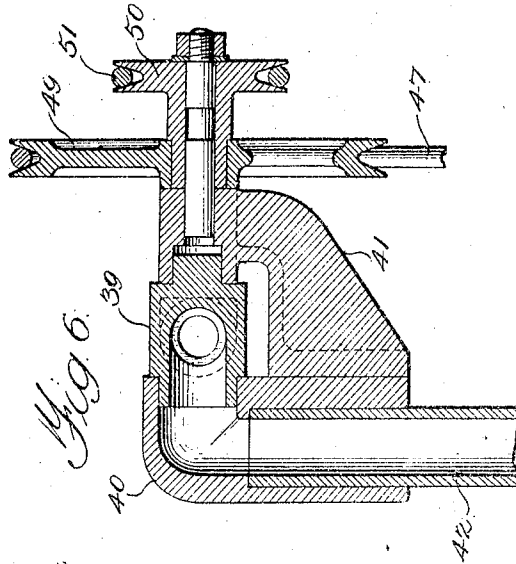


Fig. 6.

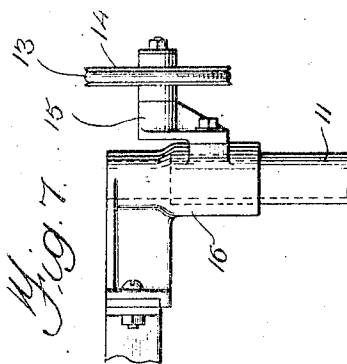
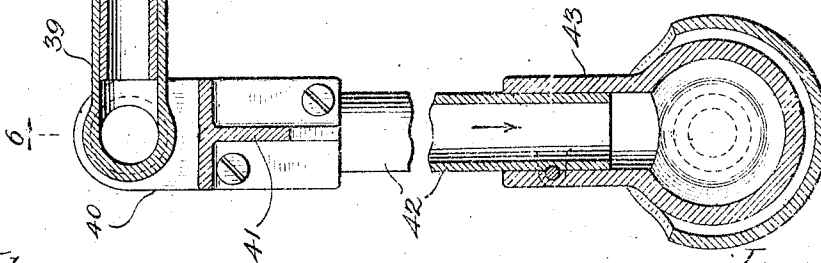


Fig. 7.



Witnesses:

J. C. Beirick.
George L. Churdahl

Inventor.

Howard D. Colman.
By Luther L. Miller
Att'y.

UNITED STATES PATENT OFFICE.

HOWARD D. COLMAN, OF ROCKFORD, ILLINOIS.

TEXTILE-MACHINE.

1,050,762.

Specification of Letters Patent.

Patented Jan. 14, 1913.

Application filed July 18, 1910. Serial No. 572,466.

To all whom it may concern:

Be it known that I, HOWARD D. COLMAN, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Textile-Machines, of which the following is a specification.

This invention relates to apparatus for operating upon warps, as, for example, for tying two warps together.

The invention is herein exemplified in a textile machine which is bodily movable past the apparatus that supports the various pieces of work, and in which the operating mechanism of the machine is arranged to travel upon the bed of the machine. Said operating mechanism includes a knot-tying mechanism adapted to trim the ends of the knotted threads to a uniform, short, length.

One of the objects of the invention is to provide means, in a machine of the character outlined, for removing the clipped-off ends of the knots formed by the knot-tying apparatus.

A further object of the invention is to improve the means for transmitting power to said traveling operating mechanism.

In the accompanying drawings, Figure 1 is a fragmental side elevation of one form of apparatus embodying the features of my invention. Fig. 2 is a fragmental top plan view of certain portions of said apparatus. Fig. 3 is an end elevation of the carriage on which the warp-tying mechanism is mounted. Fig. 4 is a section on line 4 4 of Fig. 2. Fig. 5 is a sectional view of the exhaust air tube with parts broken away. Fig. 6 is a section on line 6 of Fig. 5. Fig. 7 is a detail view of one of the grooved pulleys that supports the drive belt, illustrating the adjustable support of said pulley.

The warp-tying machine herein shown is arranged to be moved past one or more warp supports (not shown) of any suitable form, and therefore said machine comprises a base 1 supported upon rollers 2 and 3, said rollers being arranged to run upon rails 4 and 5 laid upon the floor. The rail 5 is herein shown as grooved, and the rollers 3 have flanges 6 thereon to travel in the groove of said rail. Rising from the base 1 are standards 7 which support the bed 8 of the warp-tying machine. On this bed is

mounted a carriage or slide 9 to support a suitable mechanism for selecting threads from the old and the new warp, and for uniting such selected threads. This mechanism may be of any suitable character, as, for example, that fully illustrated and described in British Patent No. 10,484 of 1905. Said mechanism comprises a knotter arranged to trim the ends of the united threads to a predetermined length. The means for carrying off the clippings and for driving the mechanism will next be described.

I provide a suitable rigid stationary framework 10, which framework, in the embodiment herein shown, includes an upright 11 and a horizontally extending elevated bar 12, said bar extending parallel with the path of movement of the warp-tying machine. A drive belt 13 is supported upon pulleys carried by the framework 10. I have herein shown only one of these pulleys, namely, the pulley 14 arranged at one end of the framework, a suitable pulley being provided for the belt at the opposite end of the framework. The belt 13 may be arranged to be driven in any suitable way, (not shown). Slack may be taken up in the belt 13 in any preferred manner; herein I have shown the pulley 14 as rotatably supported upon a bracket 15, said bracket being adjustably secured to the casting 16 that connects the upright 11 to the horizontal bar 12.

Upon the head end of the base 1 is mounted a suitable air-current-creating means, as, for example, an exhaust fan. In this instance the fan casing comprises a section 17 provided with lugs 18, by means of which it is fixed to the base 1. The fan casing further comprises a cover section 19 secured to the section 17.

Secured to the fan-casing section 17 is a bearing bracket 20 provided with bearings 21 and 22 for the fan shaft 23. A fan 24 of any suitable character is fixed upon the shaft 23 within the fan casing. Upon the shaft 23, between the bearings 21 and 22, is fixed a grooved pulley 25 to receive the drive belt 13. Said belt is guided to the pulley 25 by two guide sheaves 26 mounted upon a bracket 27 which is carried at a suitable elevation upon an upright bar 28 that is fixed at its lower end to the base 1 and is connected intermediate its ends to the bed 8 by

means of a bracket 29. It will be readily seen that the fan shaft 23 will be driven by the belt 13 in any position of the warp-tying machine upon the track 4 5.

5 Mounted upon the carriage 9 in proper relation to the knot-tying mechanism (not shown) is an exhaust air tube 30 (Fig. 5) into which the ends of the threads to be united are inserted by the operating mechanism. Said tube may serve as a means for
10 holding at one point the threads to be tied. When the ends of the knotted threads are trimmed off by the knoter, the clipped-off portions are drawn into the tube 30 by the
15 air current therein.

The tube 30 is connected to the inlet of the fan casing by means of a jointed system of tubes in order that the tube 30 may be in communication with the fan in all positions of the carriage 9. One end of the
20 system of tubes is connected to the rear end of the exhaust tube 30 by means of a suitable connection, as, for instance, a universal joint. In this instance, I have shown
25 a universal joint of the ball and socket type, which is best shown in Fig. 5.

31 is a bracket (Figs. 3 and 5) fixed to a post 32 attached to the carriage 9. The rear end of the exhaust tube 30 extends into
30 and is fixed to said bracket, the latter having an opening therethrough communicating with said exhaust tube. Upon the bracket 31 is formed a rounded or ball portion 33 upon which is slidably fitted the socketed end of
35 a sleeve 34. The sleeve 34 is held tightly against the rounded portion 33 by suitable means such as coiled springs 35, said springs acting upon pins 36 and 37 fixed in said sleeve and bracket.

40 A tube 38 is rigidly attached at one end to the sleeve 34 and at the other end to a coupling section 39. Said coupling section is arranged for swiveling movement in a coupling section 40 and a bracket 41 fixed
45 to said coupling section 40. (See Fig. 6.) The coupling section 40 is carried upon the upper end of a tube 42, the other end of which tube is fixed to a coupling member 43 which is supported for rocking movement
50 in a bearing opening 44 in the cover section 19 of the fan casing, and in a bracket 45 fixed to said cover section. The coupling member 43 constitutes the inlet for the fan casing.

55 A centrifugal separator 46 of any suitable type communicates with the outlet of the fan casing.

Power is communicated from the shaft 23 to the operating mechanism carried by the
60 slide 9 by means comprising a belt 47 running over a pulley 48 fixed on said shaft and a pulley 49 rotatably carried by the bracket 41. Fixed to the pulley 49 is a pulley 50. The axis of the pulleys 49 and 50 coincides
65 with the axis of the joint between the cou-

pling sections 39 and 40. A belt 51 extends from the pulley 50 to a drive pulley 52 (Fig. 3) on the carriage 9.

In operation, the belt 13 drives the shaft 23 which in turn communicates power 70 through the belts 47 and 51 to the warp-tying mechanism, and also causes rotation of the fan 24. The rotation of the fan creates an exhaust air current in the tube 30. It will be seen that the operating mechanism 75 is in driven relation to the shaft 23 and that the exhaust tube 30 is in communication with the fan 24 in all positions of the carriage 9 upon the bed 8.

In the present embodiment of the inven- 80 tion, the warp-tying machine operates upon successive sections of the warps. After the operating mechanism upon the carriage 9 has operated upon a section of the warps, the warp-tying machine is advanced along 85 the track 4 5 into proper relation to the next succeeding section of the warps, and is fixed in such position by suitable means such as a brake 53.

54 (Fig. 2) is a spring buffer mounted 90 upon the bracket 29 in position to constitute a yielding stop for the carriage 9 at the head end of the machine.

I claim as my invention:

1. In a warp-tying machine, in combina- 95 tion, a machine frame; a knot-tying mechanism mounted to travel in said machine frame; an air connection and an actuating means stationarily mounted in said machine frame; and flexible connections between said
100 air connection and actuating means on the one hand and the knot-tying mechanism on the other hand.

2. In a warp-tying machine, in combina- 105 tion, a machine frame; a knot-tying mechanism mounted to travel in said machine frame; an air connection and an actuating means stationarily mounted in said machine frame; and flexible connections between said
110 air connection and actuating means on the one hand and the knot-tying mechanism on the other hand, said flexible connections being arranged to flex synchronously.

3. In a warp-tying machine, in combina- 115 tion, a machine frame; a knot-tying mechanism mounted to travel in said machine frame; an air-current-creating means stationarily mounted in said frame; a system of jointed tubes connecting said current-creating means and said knot-tying mecha-
120 nism; and driving means for said mechanism supported by said tubes.

4. In a textile machine, a machine frame, an operating mechanism mounted to travel in said frame, a fan and fan shaft station- 125 arily mounted in said machine frame, a system of jointed air tubes connecting said fan with said operating mechanism, and a driving connection between said fan shaft and
130 said operating mechanism, said connection

including elements supported by said system of tubes.

5. In a textile machine, a machine frame, an operating mechanism mounted to travel in said frame, a fan and a fan shaft stationarily mounted in said machine frame, a system of jointed air tubes connecting said fan with said operating mechanism, and a belt drive between said fan shaft and said operating mechanism, said drive comprising pulleys carried by said system of air tubes at the joint in said system.

6. In a textile apparatus, a base supported for traveling movement, a bed supported in elevated position upon said base, an operating mechanism arranged to travel upon said bed longitudinally of said bed and said base, a fan and fan shaft stationarily mounted upon one end of said base and at one end of said bed and below said bed, a system of jointed air tubes connecting said fan and said operating mechanism in all positions of said mechanism on said bed, a driving connection between said fan shaft and said operating mechanism, said connection comprising elements supported by said system of jointed tubes, a stationary framework, and a belt drive supported partly by said framework and partly by said base, said belt drive communicating power to said fan shaft in the various positions of said base.

7. In a textile apparatus, a base supported for traveling movement, a bed supported in elevated position upon said base, an operating mechanism arranged to travel upon said bed longitudinally of said bed and said base, an air-current-creating means stationarily mounted upon one end of said base and at one end of said bed and below said bed, and a system of jointed air tubes connecting said air-current-creating means to said operating mechanism in all positions of said mechanism on said bed.

8. In a textile apparatus, a track; a base mounted to travel on said track; a bed supported in elevated position upon said base; an operating mechanism arranged to travel upon said bed longitudinally of said bed and said base; an air-current-creating means provided with a shaft, and stationarily mounted upon one end of said base and at one end of said bed and below said bed; a system of jointed air tubes connecting said current-creating means and said operating mechanism in all positions of said mechanism on said bed; an elevated stationary support extending longitudinally of said track; a drive belt supported by said elevated support; an elevated guide on said base, said belt being guided by said guide to the shaft of said current-creating means; and a driving connection between said shaft and the operating mechanism, said connection comprising elements supported by said system of jointed tubes.

9. In a warp-tying machine, in combination, a machine frame comprising a base and an elevated bed; knot-tying means mounted to travel on said bed; an air-current-creating means provided with a shaft and stationarily mounted upon the base below the bed; an upwardly extending air tube mounted at its lower end to swing and operatively connected to the current-creating means; a second air tube jointed at one end to the first tube and connected at its other end to the knot-tying means; a rotatable device supported at the junction of said tubes; a belt communicating power from said shaft to said device; and another belt communicating power from said device to said knot-tying means.

HOWARD D. COLMAN.

Witnesses:

E. E. PRICE,
LOUISE A. CULVER.